

REMARKS

Applicants hereby request further consideration of the application in view of the amendments above and the comments that follow.

The Objection to Claim 12

Applicants respectfully submit that Claim 12 reads on the elected species. Referring to **Figure 13** of Applicants' specification, the recited closure wall may read on the closure wall **491**, in which case a portion of the sealant **462** is between the closure wall **491** and the entrance opening **444C**.

Objections to the Drawings

Applicants respectfully submit that the objections to the drawings have been overcome by the comments above regarding Claim 12 and the amendment to Claim 16.

Status of the Claims

Claims 1-43 are pending in the application. Claim 16 stands rejected under Section 112. Claims 1, 2, 5-8, 10, 11, 13-15, 17, 18, 28, 31, 32, 35, 39, 42 and 43 stand rejected under Section 102(b) as being anticipated by U.S. Reissue Patent No. 37,340 to King (King). Claims 1 and 27 stand rejected under Section 103(a) as being unpatentable over U.S. Patent No. 5,848,913 to Ashcraft (Ashcraft) in view of U.S. Patent No. 5,672,846 to Debbaut (Debbaut). Claims 9, 37 and 38 stand rejected under Section 103(a) as being unpatentable over King. Claims 25, 26, 49 and 41 stand rejected under Section 103(a) as being unpatentable over King in view of Debbaut.

The Rejection under Section 112

Claim 16 has been amended to overcome the rejection under Section 112.

The Rejections under Sections 102 and 103

A finding of anticipation requires that there must be no difference between the claimed invention and the disclosure of the cited reference as viewed by one of ordinary skill in the art. *See, Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 U.S.P.Q.2d 1001 (Fed. Cir. 1991). Thus, anticipation requires that a single prior art reference disclose each and every element of the anticipated claim.

To establish a prima facie case of obviousness, the prior art reference or references when combined must teach or suggest *all* the recitations of the claim, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). As recently emphasized by the Court of Appeals for the Federal Circuit, to support combining references, evidence of a suggestion, teaching, or motivation to combine must be **clear and particular**, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). In an even more recent decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be **particular** evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, **would have selected these components for combination in the manner claimed**. *In re Kotzab*, 55, USPQ2d 1313, 1317 (Fed. Cir. 2000).

Claims 1-7, 9-27, 44 and 45

Claim 1 has been amended to recite “wherein the closure wall tapers inwardly along a direction from the entrance opening to the exit opening prior to insertion of the cable.” For example, in the embodiment as shown in **Figure 13** of Applicants’ specification, the closure

wall **451** is tapered in the insertion direction prior to insertion of a cable. This configuration may assist in retaining the sealant in the port in the event the cable is thereafter removed.

In rejecting original Claim 8, the Action characterizes King as disclosing a closure wall **26** that tapers inwardly. However, as is readily apparent from **Figure 1** of King, the segments **26** do not taper inwardly until displaced by insertion of conductors, not prior to insertion of the conductors. Accordingly, Applicants respectfully submit that Claim 1 as now amended is clearly distinguishable from King and therefore request withdrawal of the rejection of Claim 1. Claims 7, 9-27, 44 and 45 depend from Claim 1 as amended and are therefore allowable as well for at least these reasons.

At least certain of the dependent claims are further distinguishable from the cited art. Claim 16 (which was not examined in view of the Section 112 rejection) depends from Claims 1, 14 and 15 and further recites a conductor member positioned in the housing such that an insert member (which includes the closure wall) separately formed from the housing and positioned in the conductor passage is cooperatively secured in the conductor passage by the conductor member and the ledge forming a part of the housing. For example, **Figure 13** shows an insert member **490** having a closure wall **491**. The insert member is cooperatively secured in position in the conductor passage **499** by a ledge **444F** and a conductor member **410**. This arrangement may provide benefits in cost, assembly, and/or form factor. By contrast, the element **74** of King identified by the Action as corresponding to the recited insert member is not secured by the metal insert **92**, which is spaced a significant distance from the element **74**. Accordingly, Claim 16 is further distinguishable from the cited art for these additional reasons.

Claim 27 depends from Claim 1 as amended and is further distinguishable from the cited art for the reasons discussed below regarding new Claim 46.

New Claim 44 depends from Claim 18, which recites "wherein the first and second closure walls are operative to retain the sealant in the sealing region." Claim 44 further recites "wherein the sealant is a gel adapted to be elongated and elastically deformed by insertion of the conductor into the sealing region" between the closure walls. An exemplary connector **400** is shown in **Figure 13** of applicants' specification.

In the connector **400**, the closure walls **451** and **491** may serve to retain the sealant **462** in the sealing region **499** to improve the sealing performance of the connector assembly **400**. By retaining the sealant **462** in the sealing region **499**, a suitable amount of compressive force can be maintained between the sealant and the surfaces to be sealed. Moreover, a sufficient amount of the sealant may be retained in the sealing passage to re-form into a sealing plug upon removal of the cable from the port **444**. In the absence of the closure wall **491**, there may be a tendency for the cable to displace the sealant **462** into the interior cavity **422** so that there is insufficient sealant **462** remaining in the passage **444B** (and, more particularly, in the passage **499**) to effectively seal about the cable or to seal upon removal of the cable. The closure wall **451** may likewise serve to retain the sealant **462** in the sealing region **499** as the cable is withdrawn from the port **444**. The closure walls **451**, **491** may wipe the sealant **462** from the cable as the cable is inserted therethrough. Thus, the closure walls **451**, **491** may reduce the amount of sealant needed to provide the desired sealing performance, particularly in the case of multiple insertions and removals of the cable or cables.

Features directed to addressing other concerns may exacerbate the foregoing problems. For example, it may be desirable or even required that a chamber **435** be provided beyond the set screw **402** to allow an additional length of the conductor of the cable to be inserted into the conductor block **410**. This additional length may serve to provide a greater margin for error in installing the cable and to improve the integrity of the securement (*e.g.*, to reduce the risk of extruding the cable out from beneath the set screw **402**). However, the chamber **435** may allow an undesirably great amount of the sealant **462** to be displaced from the passage **444B**. The closure wall **491**, by preventing or limiting the displacement of the sealant **462** into the chamber **435**, allows for the provision of the chamber **435** without an undue loss of sealing performance.

King discloses a connector (**Figure 20**) including puncturable members **152**, **158** to contain and temporarily separate two different parts of a two part epoxy (*see*, King at col. 10, lines 1-35). However, King does not suggest such an arrangement where a gel sealant is disposed between the members **152**, **158**, the gel being adapted to be elongated and elastically deformed by insertion of the conductor into the region between the members **152**, **158**.

Inasmuch as King merely teaches an additional element **152** for the purpose of separating parts of an epoxy, it would not have been in any way obvious to provide two such walls to contain an elongatable and elastically deformable gel as claimed.

New Claim 45 recites:

45. The electrical connector of Claim 1 wherein:
the housing defines an interior cavity communicating with the conductor passage;
a conductor member is positioned in the interior cavity;
the interior cavity includes a volume filled with a compressible gas to receive the sealant when the sealant is displaced by the conductor; and
the volume is located on a side of the sealant opposite the entrance opening.

The claimed construction may facilitate insertion and retention of a conductor such as a cable, particularly when the conductor is relatively large and an elastically elongatable gel is employed as the sealant. In that case, if no such compressible gas-filled volume is provided, it may require an inordinate amount of force to deform and displace the gel out of the cavity to allow insertion of the conductor. Moreover, the gel may thereafter exert a force sufficient to undesirably eject the conductor from the cavity and even the passage.

By contrast, the wire connectors of King each include sealant that fills the lower, conductor holding end of the wire cavity. King does not recognize the concerns addressed by applicants' invention as claimed and, as described, is unlikely to encounter such problems. Accordingly, Claim 45 is further distinguishable from the cited art for these additional reasons.

Claims 32, 33 and 36-39

Claim 32 as amended recites, *inter alia*:

- b) a first penetrable closure wall extending across the conductor passage;
c) a sleeve member disposed in the conductor passage and defining a sleeve passage, the sleeve member including a second penetrable closure wall extending across the conductor

passage such that the first and second closure walls define a sealing region therebetween ; and

d) sealant disposed in the sleeve passage, the sealant being adapted for insertion of the conductor therethrough such that the sealant provides a seal about the inserted conductor;

e) wherein at least a portion of the sealant is disposed in the sealing region; and

f) wherein the sealant is a gel adapted to be elongated and elastically deformed by insertion of the conductor into the sealing region.

Accordingly, Claim 32 as amended is distinguishable from the cited art for the reasons discussed above with regard to Claim 44. Applicants therefore request withdrawal of the rejection of Claim 32 and Claims 33 and 36-39 which depend therefrom.

Claims 42 and 43

Claim 42 as amended recites, *inter alia*:

providing an insert member including:

a sleeve member defining a sleeve passage and including a second penetrable closure wall extending across the sleeve passage;

....

inserting the insert member into the conductor passage such that the first and second closure walls define a sealing region therebetween;

wherein the sealant is a gel adapted to be elongated and elastically deformed by insertion of the conductor into the sealing region.

Accordingly, Claim 42 as amended is distinguishable from the cited art for the reasons discussed above with regard to Claim 44. Applicants therefore request withdrawal of the rejection of Claim 42 and Claim 43 which depends therefrom.

New Claims 46-51

New Claim 46 is directed to a busbar assembly and generally corresponds to original Claim 27. Original Claim 27 stands rejected under Section 103 over Ashcraft in view of Debbaut '846. The Action acknowledges that Ashcraft fails to disclose the provision of a sealant as claimed. However, the Action contends that it would have been obvious to modify Ashcraft to include a sealant as claimed in view of the disclosure of the sealant 16 in Debbaut '846. Applicants respectfully disagree.

Notably, there is no apparent teaching or suggestion in Ashcraft or Debbaut '846 that a sealant as disclosed in Debbaut '846 could or should be employed in Ashcraft in the manner proposed. Moreover, because of the very different types of connectors disclosed in Ashcraft and Debbaut '846 such a modification of the Ashcraft connector in view of Debbaut '846 would not be at all obvious.

Debbaut '846 discloses crimp-type splice connectors. Thus, the connectors of Debbaut '846 need only accommodate a single insertion of each cable to be spliced. Typically, each cable will be retained in the connector indefinitely. In the event the splice is to be broken, the cables are simply cut and the connector discarded. By contrast, connectors of the type disclosed in Ashcraft and as recited in Claim 1 typically must be capable of effectively accommodating insertion, removal and re-insertion of one or more cables. If one were to simply install a sealant in the ports 44, 45 of Ashcraft, some or all of the sealant would tend to be removed with the cables when they are removed, thereby jeopardizing the effectiveness of the seal about subsequently inserted cables. Thus, one of ordinary skill in the art, recognizing the problem, would not regard the provision of the sealant in the connector of Debbaut '846 as applicable to a busbar connector as in Ashcraft.

The non-obviousness of the claimed invention is further demonstrated by the long felt, unmet need for an improved waterproof or water-resistant busbar assembly. As discussed in the *Declaration of Rudolph R. Bukovnik Under 37 C.F.R. §1.132* submitted herewith, busbar connectors, which are shown in "Homac Mfg. Company, Fact Sheet, 'Flood-Seal'® Rubberized Aluminum Bar" (Reference Cite No. 40) submitted with Applicants' Information Disclosure Statement dated December 20, 2002 have been widely employed in the power transmission industry for more than ten (10) years. Applicants estimate that the sales of these and similar busbar connectors exceed 1.5 million units and 22.5 million dollar

(\$22.5M) per year. However, these connectors suffer from significant shortcomings and a relatively high failure rate in use. In particular, these connectors suffer from "craft sensitivity." In use, an operator must trim the rubber boot over each port to the proper diameter to seal about a subsequently inserted cable. If too much of the boot is trimmed, the overstretched boot will tend to crack or split over time, thereby defeating the seal. Notwithstanding these significant and long felt problems, connectors as disclosed in Ashcraft have not been modified in the manner now proposed by the Action to provide Applicants' inventive solution.¹

Claims 47-51 depend from Claim 46 and are therefore allowable as well for at least these reasons.

At least certain of the dependent claims are further distinguishable from the cited art. New Claim 48 depends from Claim 46 and further recites "wherein each of the first and second closure walls tapers inwardly along a direction from the entrance opening to the exit opening prior to insertion of the cable." Accordingly, Claim 48 is further distinguishable from the cited art for the reasons discussed above with regard to Claim 1.

Claim 50 depends from Claims 46 and 49 and recites a busbar assembly as claimed wherein each port has two closure walls defining a sealing region therebetween, the sealant is disposed in the sealing region, and the sealant is a gel adapted to be elongated and elastically deformed by insertion of conductors into the sealing regions. Accordingly, Claim 50 is further distinguishable from the cited art for the reasons discussed above with regard to Claim 44.

¹ Notably, Ashcraft is not directed to a watertight busbar connector. Rather, the cover 12 is provided for electrical insulation. See Ashcraft at col. 4, lines 23-26

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CONCLUSION

Applicants respectfully submit that this application is now in condition for allowance, which action is requested. Should the Examiner have any matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

Respectfully submitted,

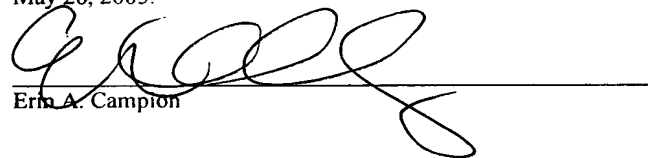


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